Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) In a medical device system having a plurality of monitoring elements, a method for detecting poor signal quality comprising the steps of:

(a) receiving a neurological signal from one of the monitoring elements;

(b) processing the received signal to generate a plurality of data points for the signal in a moving time window;

(c) detecting that the received signal has poor signal quality by determining that an amount of the data points exhibiting poor signal quality within the moving time window has exceeded a predetermined threshold; and

(d) ignoring the received signal experiencing poor signal quality in signal processing.

2. (Original) The method of claim 1, further comprising the step of (e) delivering a notification that the signal from one of the monitoring elements is experiencing poor signal quality.

3. (Original) The method of claim 1, further comprising the step of (e) providing a substituted signal for the ignored signal experiencing poor signal quality.

4. (Original) The method of claim 1, wherein the step of detecting comprises the step of determining that percentage of the data points exhibiting poor signal quality within the moving time window has exceeded a predetermined threshold percentage.

5. (Original) The method of claim 1, wherein the step of ignoring comprises the step of ignoring the received signal experiencing poor signal quality in a closed-loop feedback control of a treatment therapy.

6. (Original) The method of claim 1, wherein the step of receiving comprises the step of receiving the neurological signal selected from the group consisting of an electrical signal, a chemical signal, a biological signal, a temperature signal, a pressure signal, a respiration signal, a heart rate signal, a ph-level signal, and a peripheral nerve signal.

7. (Original) The method of claim 1, wherein the step of receiving comprises the step of receiving the signal from the monitoring element selected from the group consisting of an electrode and a sensor.

8. (Original) The method of claim 1, wherein the step of processing comprises the step of identifying a value of at least one variable quantifying signal quality.

9. (Original) The method of claim 8, wherein the step of identifying a value comprises the step of determining a flat-line fraction signal to determine whether a signal is experiencing a flat-lining artifact.

10. (Original) The method of claim 8, wherein the step of identifying a value comprises the step of determining a flat-line fraction signal to determine whether a signal is experiencing amplifier saturation clipping.

11. (Original) The method of claim 8, wherein the step of identifying a data value comprises the step of determining an amplitude at a predetermined frequency to determine whether a signal is experiencing a mains artifact.

12. (Original) The method of claim 11, wherein the step of determining an amplitude comprises the step of determine an amplitude at about 60 Hz.

13. (Original) The method of claim 11, wherein the step of determining an amplitude comprises the step of determine an amplitude at about 50 Hz.

14. (Original) The method of claim 1, wherein the step of detecting comprises the step of performing a time-averaging of the data points.

15. (Original) The method of claim 1, wherein the step of detecting comprises the step of performing a time-averaging of the data points using exponential forgetting.

16. (Original) The method of claim 1, wherein the step of receiving further comprises the step of receiving the neurological signal for purposes of providing closed-loop feedback control of a treatment therapy.

17. (Original) The method of claim 11, further comprising the step of (e) resuming consideration of the poor signal in the closed-loop feedback control once it is determined that the amount of the data points exhibiting poor signal quality within the time window has fallen below a second threshold.

18. (Original) A medical device system for managing a nervous system disorder and capable of detecting poor signal quality comprising in combination:

(a) at least one monitoring element, each generating a neurological signal of a sensed neurological condition; and

(b) computer executable instructions for performing the steps of (i) generating a plurality of instantaneous data points of the received neurological signal for a moving time window; (ii) detecting that the received signal has poor signal quality by determining that an amount of the data points exhibiting poor signal quality within the time window has exceeded a predetermined threshold; and (iii) ignoring the received signal experiencing poor signal quality in signal processing.

19. (Original) The medical device system of claim 18, wherein computer executable instructions further performs the step (iv) delivering a notification that the signal from one of the monitoring elements is experiencing poor signal quality.

20. (Original) The medical device system of claim 18, wherein computer executable instructions further performs the step (iv) providing a substituted signal for the ignored signal experiencing poor signal quality.

21. (Original) The medical device system of claim 18, wherein the step of detecting comprises the step of determining that percentage of the data points exhibiting poor signal quality within the moving time window has exceeded a predetermined threshold percentage.

22. (Original) The medical device system of claim 18, wherein the step of ignoring comprises the step of ignoring the received signal experiencing poor signal quality in a closed-loop feedback control of a treatment therapy.

23. (Original) The medical device system of claim 18, wherein the nervous system disorder is selected from the group consisting of a disorder of a central nervous system, a disorder of a peripheral nervous system, and mental health disorder, and psychiatric disorder.

24. (Original) The medical device system of claim 18, wherein the nervous system disorder is selected from the group consisting of epilepsy, Parkinson's disease, essential tremor, dystonia, multiple sclerosis (MS), anxiety, a mood disorder, a sleep disorder, obesity, and anorexia.

25. (Original) The medical device system of claim 18, wherein the treatment therapy is selected from the group consisting of electrical stimulation, magnetic stimulation, drug infusion, and brain cooling.

26. (Original) The medical device system of claim 18, wherein the neurological signal is selected from the group consisting of a electrical signal, a chemical signal, a biological signal, a temperature signal, a pressure signal, a respiration signal, a heart rate signal, a ph-level signal, and a peripheral nerve signal.

27. (Original) The medical device system of claim 18, wherein the monitoring element is selected from the group consisting of an electrode and a sensor.

28. (Original) The medical device system of claim 18, wherein the medical device system is selected from the group consisting of an external system, a hybrid system, and an implanted system.

29. (Original) The medical device system of claim 18, wherein the computer executable instructions are further configured to perform the step of identifying a data value of at least one parameter.

30. (Original) The medical device system of claim 18, wherein the computer executable instructions are further configured to perform the step of identifying a data value by determining a clip fraction signal to determine whether a signal is experiencing a clipping artifact.

31. (Original) The medical device system of claim 18, wherein the computer executable instructions are further configured to perform the step of identifying a data value by determining an amplitude at a predetermined frequency to determine whether a signal is experiencing a mains artifact.

32. (Original) The medical device system of claim 31, wherein the step of determining an amplitude comprises the step of determine an amplitude at about 60 Hz.

33. (Original) The medical device system of claim 18, wherein the step of determining an amplitude comprises the step of determine an amplitude at about 50 Hz.

34. (Original) The medical device system of claim 18, wherein the computer executable instructions are further configured to perform the step of (iv) resuming consideration of the poor signal in the closed-loop feedback control once it is determined that the amount of the data points exhibiting poor signal quality within the time window has fallen below a second threshold.

35. (Original) The method of claim 1, wherein step (c) comprises:

(i) determining a signal power to noise power ratio.

36. (Original) The method of claim 1, wherein step (c) comprises:

(i) determining a fraction of a foreground window that contains noisy data.

37. (Currently Amended) The method of claim of claim 1, further comprising:

(e) detecting a movement artifact with at least one accelerometer; and

(f) utilizing an output of the at least one accelerometer to reduce the movement artifact.